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ABSTRACT

A longitudinal field study conducted in Turku, Finland, traced the development of aggression as a function of the viewing of violence by children from the ages of 7 and 9 to the ages of 15 and 17 to explore the connection between violence viewing and viewers' aggression, and to shed light on the question of causality. The 220 subjects, both male and female, were interviewed six times during the years 1978 to 1985. The aggression of the subjects was measured with a modified version of the Peer Rating Index of Aggression, which asked each child to name all the children in his/her class who had displayed specific aggressive behaviors during the school year. Physical fighting was measured when the subjects were 15 and 17 years old using a procedure used by Patterson et al. (1984), and aggressive fantasizing was measured by six items from the fantasy scales derived by Rosenfeld et al. (1982). Subjects were also asked to estimate the amount of television viewing and video viewing they did and their cinema attendance. Data were analyzed using cross lagged panel correlations, process analysis, differences between the various subject groups, and path analysis. Positive, often statistically significant, correlations between violence viewing and aggression were found in all phases of this study. Detailed results of the data analyses are presented in four figures and six tables. (34 references) (CGD)

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VIOLENCE VIEWING AND ADOLESCENT AGGRESSION, A LONGITUDINAL STUDY.

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Paper presented to the 1986 International Television Studies Conference

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The development of aggression as a function of violence viewing has been traced from the age of seven and nine to the age of 15 and 17 in a field study in Turku, Finland. 220 subjects, both male and female, were interviewed six times in the course of the study.
Even if the study found support, on a shorter time lag, for the assumption that aggressive children and young people choose violent programmes to watch, most of the completed analyses support the assumption that a causal relation exists between violence viewing and aggressiveness so that extensive violence viewing increases the viewers' aggressiveness.
The possibility of a third factor explaining the connection between the factors did not receive support.

There is a rich selection of literature about the relationships between violence viewing and viewers' aggression (i.a. Eron et al., 1971; Dominic & Greenberg, 1972; McCarthy et al., 1975; Lefkowitz et al., 1977; Dorr & Kowaric, 1981; Gerbner & Gross, 1981; Elmhorn, 1981; Milavsky et al., 1982; Lagerspetz & Viemerö, 1982, Eron, 1982; Huesmann & Eron, 1984; Viemerö, 1984; Huesmann & Eron, 1986; Lagerspetz & Viemerö, 1986).

Researchers are not satisfied with merely stating the relation between watching film violence and aggressiveness in the viewer, but try increasingly to explain the mental processes that are behind this relation (e.g. Wartella, 1980; Huesmann, 1982; Wartella & Reeves, 1985). The explanatory models that are going to be presented are not the only ones, but they can perhaps best account for the synthesis of many different factors that are influential in a film viewing situation. Neither are these models mutually exclusive, but they may have a joint influence, thus increasing the influence on viewers watching violence.

a) Modelling and imitation. The influence of violence viewing can be direct through modelling and imitation (Bandura, 1973, 1977). Children who had seen an aggressive film model showed more aggressive behaviour than children who had watched a non-aggressive model. The film model was as effective as a living model (Bandura, 1968).

b) Desensitization or decrease in physiological arousal. The process of desensitization has been used to show that violence viewing need not necessarily have any influence on a viewer's aggressiveness because we "get

used to" violence (Zillmann, 1982). Berkowitz (1984), on the other hand, proposed "that the lowered level of physiological arousal resulting from several viewings of aggressive movies might actually reflect a reduced internal conflict of a decreased aggression anxiety, but not a decline in the observer's inclination to aggression" (Berkowitz, 1984, p.424).

c) Cognitive desensitization, meaning the modifying influence violence viewing has on attitudes and values (Hawkins & Pingree, 1982; Gerbner, 1983). Children who watch much violence think that there is nothing wrong in the behaviour of Columbo or Kojac and that the methods they use in their work are part of police methods (Janis, 1980).

d) Information processing theory. The more a child encodes, rehearses and retrieves aggressive events and scenes from his environment, for example from the media, the more likelihood there is of aggressive behaviour on his part. Fantasizing about aggressive behaviour is one form of rehearsal recorded by Husmann & Eron (1984). The more fantasies a child has about aggressive actions and events the more readily he retrieves aggressive strategies and the more ready he is to act aggressively.

e) Cognitive-neoassociation model. Starting from studies of memory activity and using such concepts as priming effects and spreading activation, Berkowitz (1984) proposes that mass media communications give the viewers ideas that may then be translated into open behaviour. Watching violent behaviour activates ideas that are semantically related to the observed event.

Although most of the more recent studies note an association between violence viewing and aggression, and although all the researchers and experts in the field are convinced of the harmful effects of violence viewing, particularly on children's aggressiveness, it has not been possible to demonstrate indisputably any causal relationship between these variables.

The positive correlation between violence viewing and aggression has been explained in different ways:

1. Watching violence on television and in films causes aggression in the viewer (Lefkowitz et al., 1977; Belson, 1978).

2. Aggressive children and young people choose violent programmes to watch (Gunter, 1983).

3. The causal relation is bidirectional, forming a framework in which violence viewing increases aggressiveness and at the same time aggressive subjects choose a greater number of violent programmes to watch (Huesmann & Eron, 1984).

4. Although there are cross sectional relationships between violence viewing and aggression, these do not lead to lasting changes in aggressiveness. This connection is dependent on a third factor, among other things, on the viewer's social background (Milavsky et al., 1982) or on the viewer's intelligence (Wiegman et al., 1983).

According to surveys in earlier studies there is little convincing evidence to suggest that watching film violence in natural settings causes people to be more aggressive. The only valid evidence for the existence of a causal relationship between violence viewing and aggression, according to Freedman (1984), is the cross lagged panel correlations used by Lefkowitz, Eron, Walder and Huesmann (1977). They showed that the correlation for boys between violence viewing at the age of nine and aggressiveness measured ten years later was greater than that between aggressiveness measured at the age of nine and violence viewing measured ten years later.

The present eight year longitudinal study has been completed in order to study the connections between violence viewing and viewer's aggression as well as to shed light on the question of causality.

METHOD

Subjects

220 first and third grade pupils from two schools in Turku, Finland, were interviewed six times during the years 1978 to 1985. 115 of the pupils were girls (64 first graders and 51 third graders) and 105 were boys (56 first graders and 49 third graders). The age of the subjects was seven or nine years. Both schools were state schools and there were no obvious social class differences between the schools. The children in the nine initial classes were followed for eight years.

Procedures

All the interviews were conducted in the subjects' classrooms as group interviews. One exception were the first grades which were interviewed individually because of the low reading and writing skills of the children. Another exception was the last phase of the study in 1985. Interview booklets were then mailed to the subjects because many of them had finished school, and because both economical aspects and time limits made private interviews impossible.

Measures

The aggression of the subjects was measured, among other things, with a modified version of the Peer Rating Index of Aggression (Walder et al., 1961).

Each child named all the children in his/her class who had displayed ten specific aggressive behaviours during the school year. The nominations were completed by marking names on lists of all the children in the subject's class. The items were of the type "Who starts a fight over nothing?". The internal consistency (coefficient alpha) of the measure was .96.

Violent behaviour was measured when the subjects were 13 and 15 years old in the form of the number of involvements in fights during the school year.

Physical fighting was measured when the subjects were 15 and 17 years old by a procedure used by Patterson et al. (1984). The subjects were presented with statements such as "Gets into many fights" and "Attacks people physically" where they were allowed to mark the correct alternatives (0 = not true to 2 = often true).

The extent of aggressive fantasizing was measured by six items from the fantasy scales derived by Rosenfeld et al. (1982). The items were of the type "Do you sometimes have daydreams about hitting or hurting somebody you don't like?". The coefficient alpha for the scale was .62.

The subjects were asked to estimate the amount of TV viewing and video viewing they did and their cinema attendance. The total number of hours spent watching TV was also obtained in parent interviews.
The TV viewing frequency was measured by asking the subjects to select from each of five lists of programmes the one they watched the most. All the serial programmes on TV during the time of the interviews were included in the lists and rated by the author and at least two psychology graduate students for violence on a scale of five points. After the selection, the

subjects marked the frequency of watching the programme. Each child's TV viewing frequency was the sum of the scores for these responses as to the selected programmes.

Violence viewing (= preference for violent TV programmes) was determined from the same selections by weighting the violence ratings of the selected programmes with the frequency with which the subject reported watching the programme.

The movie and video violence score was the mean for the violence rating scores of the movies and video films seen.

Identification with aggressive TV characters measured the extent to which the subject believes that he/she resembles certain aggressive TV characters. The subjects were asked "How much do you act like, or do things like X in film X?

RESULTS

There were positive, often statistically significant, correlations between violence viewing and aggression in all of the phases of the present study.

Cross lagged panel correlations

In Figure 1 the cross lagged panel correlations between violence viewing and aggression are shown separately for the girls and boys. The simultaneous correlation calculated from the results for the first and third grades is positive and statistically significant for the girls. There are no connections between the variables measured in grades 7 and 9

neither for the boys nor for the girls. The most important correlations are on diagonals. Of these, the correlations between the earlier measured aggressiveness and later measured violence viewing are lower (negative) than the correlations between the earlier measured violence viewing and later measured aggression. These three facts can be taken as an indication that aggressiveness cannot be regarded as a cause of violence viewing. It may, moreover, be assumed that violence viewing may be regarded as predicting aggression in the chain of cause and effect. It may be pointed out that violence viewing in these analyses only included the violence viewing provided by television serials.

(Figure 1)

Process analysis

One way of determining directionality in a causal relationship is the process analysis used by Chaffee & McCleod (Neale & Liebert, 1973). The starting point of this method is that there are two rival hypotheses of directionality a) viewing violence leads to an increase in aggression, and b) aggressiveness leads to violence viewing.

If a) violence viewing leads to aggressive behaviour, it happens via the learning process and there is a possibility of later use of this knowledge: TV violence viewing -> learning of TV behaviour (=imitating behaviour seen on TV) -> aggression. If b) aggression leads to violence viewing, this viewing is intentional and selective: Aggression -> preference for violent TV -> viewing of violent programmes.

Figure 2 presents the alternatives a) and b) for the boys and girls separately. In model a) imitation of what was seen on television was presumed to be an indication of learning. Because imitation was not

measured in grades 1 and 3 Figure 2 used identification with aggressive TV characters. These measurements intercorrelated highly, showing that if identification with TV characters occurs, the behaviour of these characters is imitated.

When one compares the a) and b) alternatives, it seems that path a), the learning hypothesis, receives support. Using due caution, one may draw the conclusion that the hypothesis that aggressiveness leads to watching violence, does not obtain as much support as the contrary hypothesis.

(Figure 2)

If instead of beginning with the learning theory, the information processing theory was taken as a theoretical background, the second stage of path a) would contain some cognitive factor, e.g. an aggressive fantasy. When the aggressive activities viewed are repeated with the help of imitation or fantasy treatment, the consequence is an increase in the level of aggression: a) TV violence viewing -> aggressive fantasy -> aggression (Figure 3). In this case, too, alternative a) seems more effective, especially regarding boys.

(Figure 3)

Differences between the various subject groups.

The subjects who in 1978 had a low score for watching violence were compared to those with high scores in relation to the 1983 variables. Each group was preset by about one third of the complete number of subjects. The groups differed significantly, amongst other things, in the amount of TV viewing, the amount of violence viewing, video viewing and the number of

cinema visits, and in the violence of the video and television films seen. The groups did not differ significantly in peer rated aggression, but did so in violent behaviour (frequency of involvement in fights) (Table 1). Those subjects who watched a large amount of violence at the ages of seven and nine also did so at the ages of thirteen and fifteen, and above all behaved more violently at the ages of 13 and 15 than those who did not previously watch violent programmes to the same extent.

(Table 1)

Table 2 shows the differences in 1983 variables between those subjects who had a high score or low score in the 1978 measurement for peer rated aggression. The groups differed, amongst other things, in the frequency of cinema visits and video viewing but not in TV violence viewing.

(Table 2)

To summarise the results in Tables 1 and 2, one could say that differences in earlier TV violence viewing lead to differences in later aggressiveness, but that differences in earlier aggressiveness do not lead to differences in later TV violence viewing.

In the analyses presented above the boys and girls were considered together. To continue further along similar lines, the subjects were divided into high and low groups on the basis of peer rated aggression and TV violence viewing measured in the first and third grades, the boys and girls separately.

Table 3 presents the mean scores for the groups' peer rated aggression in the seventh and ninth grades. The originally high aggressive groups had the highest mean scores in aggression, regardless of whether they had high

or low scores in TV violence viewing. But in the originally low aggression groups those who were heavy violence viewers were later more aggressive than those viewing less violence. The above could be interpreted to mean that TV violence viewing, as far as it is possible in Finland, had no systematic influence on the aggressiveness of the children and young people who were already more aggressive. On the other hand, extensive violence viewing increased the aggression level of the nonaggressive children.

(Table 3)

To reverse the coin, Table 4 shows the mean scores for TV violence viewing in the seventh and ninth grades of the same groups. With one exception, those groups who watched large amounts of TV violence in the first and third grades also did so in the seventh and ninth grades. But those who were later heavy violence viewers are not the ones who were originally more aggressive, but rather belonged to the low aggression group.

(Table 4)

If one can say that the results in Table 3 support the assumption that extensive violence viewing increases the aggression of the viewer, then the results of Table 4 could be interpreted as contradicting the hypothesis that aggressive children and young people choose violent programmes to watch. It should be noted that the above was true for both the boys and the girls.

According to many researchers (i.a. Lefkowitz et al., 1977) aggressive people have fantasies about hitting or hurting other people. Some researchers have used the amount of aggressive fantasies as a measure for aggression (Feshbach, 1955). Table 5 shows the means for aggressive

fantasies and physical fighting for the subjects high or low in both TV violence viewing and aggression measured eight years earlier. These results too support the hypothesis that violence viewing increases the viewers' aggression. Those subjects who were heavy violence viewers when 7 or 9 had much aggressive fantasies when 15 or 17 and concerning the boys they also had high scores in physical fighting

(Table 5)

Criminal behaviour

An interesting supplement to the above reasoning was provided by dividing the subjects convicted for various offences into different groups. Of those subjects from the original sample (N=220) who before 1985 had been convicted of offences, about 21 % originally belonged to the low aggression group. On the other hand, only 5 % belonged to the originally low TV violence viewers (Table 6).

(Table 6)

If, instead of counting the number of subjects convicted of offences, the actual number of offences was calculated, the division changed slightly (Figure 4). As regards the boys, one can say that the more aggressive a boy was and the more he watched TV violence at the age of seven and nine, the more offences he was convicted of before the age of 15 and 17. Similarly, the number of offences is clearly weighted towards the previously high TV violence viewing group. As regards the girls, those belonging to the previously medium TV violence viewing group had the highest mean number of criminal convictions. Those belonging to the

previously high aggression group only came second.

(Figure 4)

Path analysis

With the use of different kinds of regression analysis computer programmes the best predictor variables for aggression were selected. The most important predictors among the TV variables for later aggression were TV violence viewing for both the boys and the girls and identification with female TV characters for the boys. The direct causal effect of TV violence viewing on a boy's later aggression was negative (-.299, $p<.01$) but the indirect effect via identification with female TV characters was positive (.436, $p<.01$ and .715, $p<.001$). For the girls TV violence viewing had a direct causal effect on subsequent aggression (.354, $p<.05$).

The alternative hypotheses

The alternative hypothesis that aggressive children and young people might choose to watch violent programmes (e.g. Gunter, 1983) got support in the present study only on a cross sectional level. In the fourth year of the study some of the originally more aggressive girls and 10-12 year old boys liked more violent incidents in the films shown them than did their less aggressive peers.

Huesmann & Eron (1984) concluded that the causal relation could be bidirectional: violence viewing increases aggression and, at the same time, aggressive subjects elect to watch a greater number of violent programmes.

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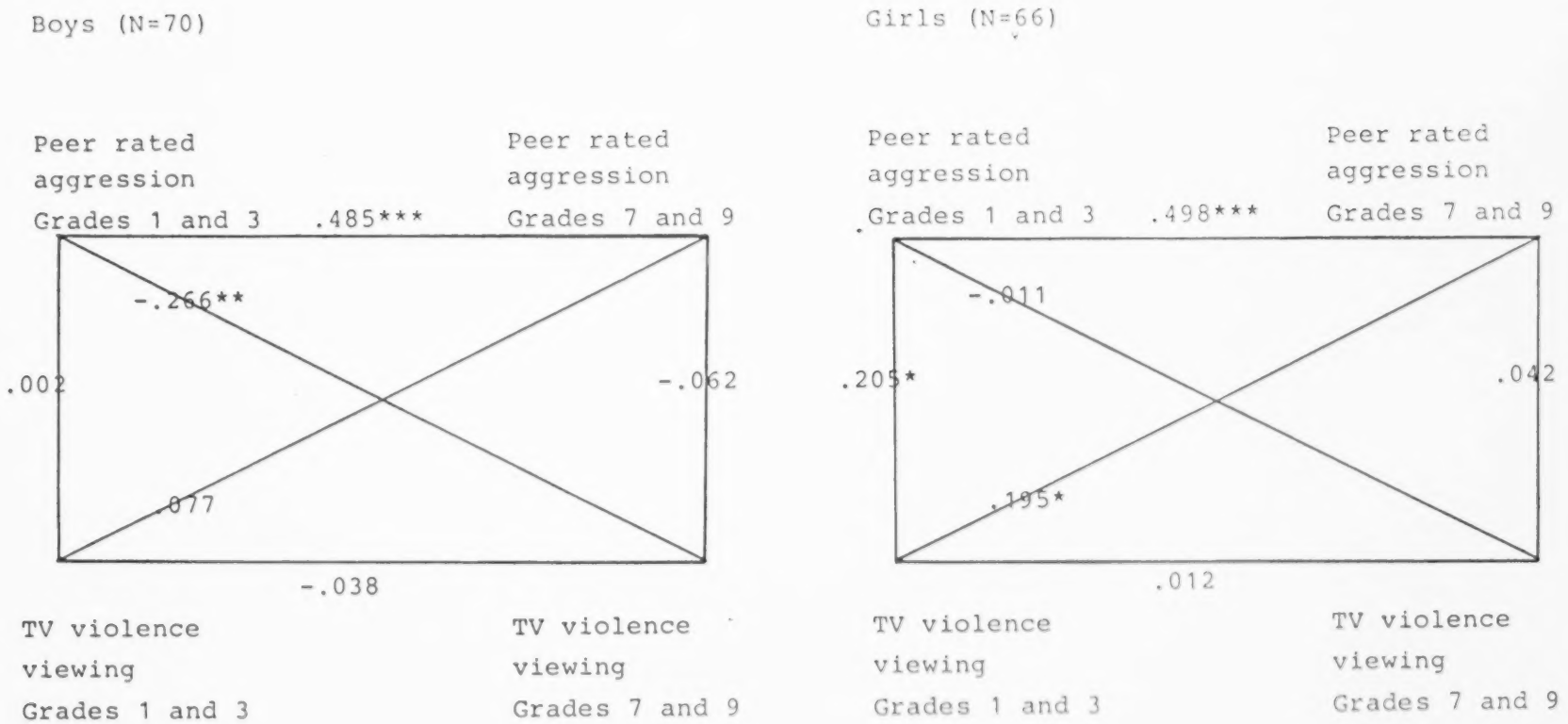

Figure 1. Cross lagged panel correlations of peer rated aggression and TV violence viewing. *** $p < .001$, ** $p < .01$, * $p < .05$.

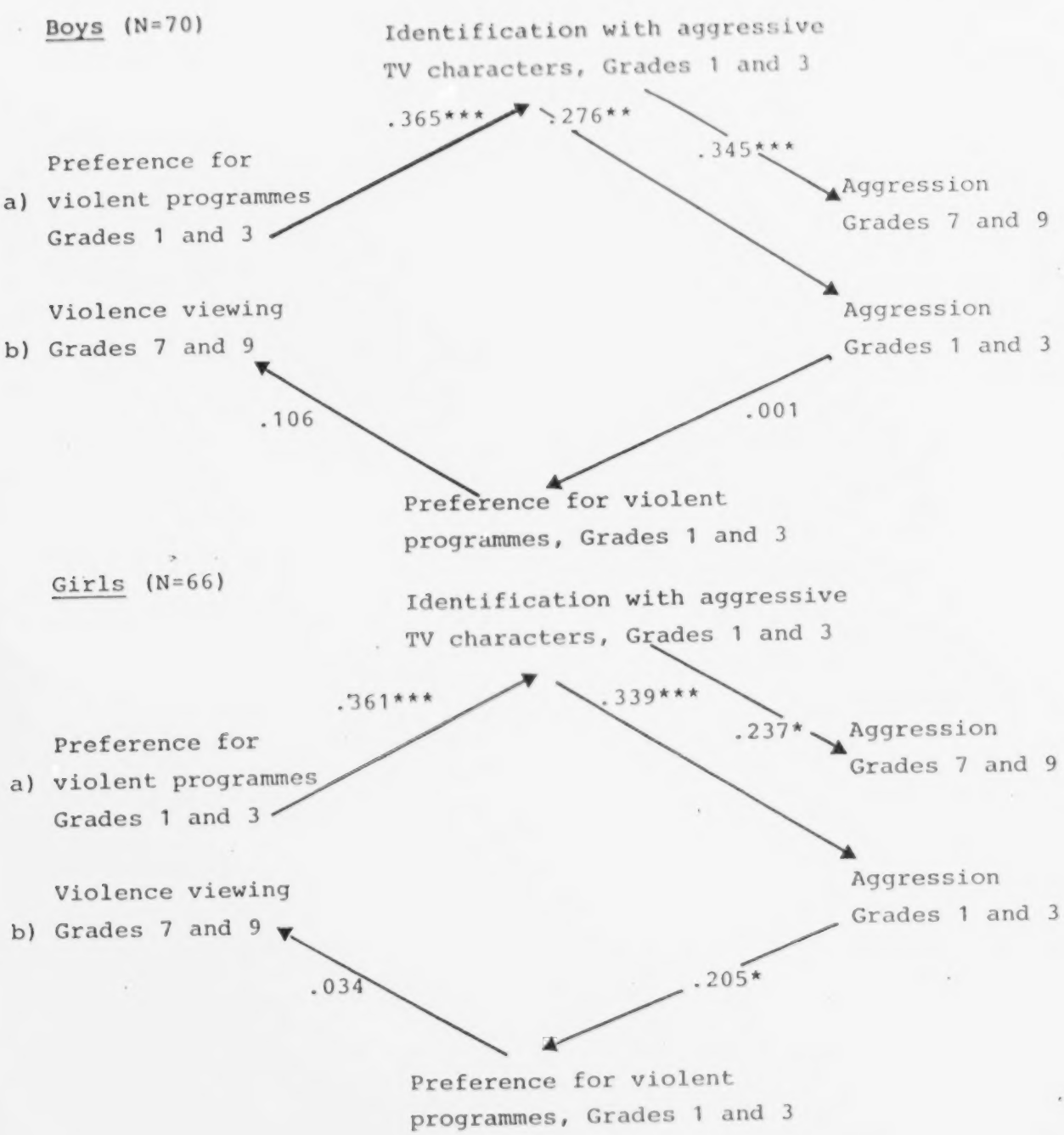
Boys (N=70)
Identification with aggressive TV characters, Grades 1 and 3
.365***
.276**
.345***
Preference for a) violent programmes Grades 1 and 3
Aggression Grades 7 and 9
Violence viewing b) Grades 7 and 9
Aggression Grades 1 and 3
.106
.001
Preference for violent programmes, Grades 1 and 3
Girls (N=66)
Identification with aggressive TV characters, Grades 1 and 3
.361***
.339***
.237*
Preference for a) violent programmes Grades 1 and 3
Aggression Grades 7 and 9
Violence viewing b) Grades 7 and 9
Aggression Grades 1 and 3
.034
.205*
Preference for violent programmes, Grades 1 and 3

Figure 2. Models based on learning theory showing directionality in the TV violence viewing - aggression relation.
*** p<.001, **p<.01, * p<.05

Violence viewing represents here the total amount of violence viewing (mean for the violence ratings of all programmes seen).

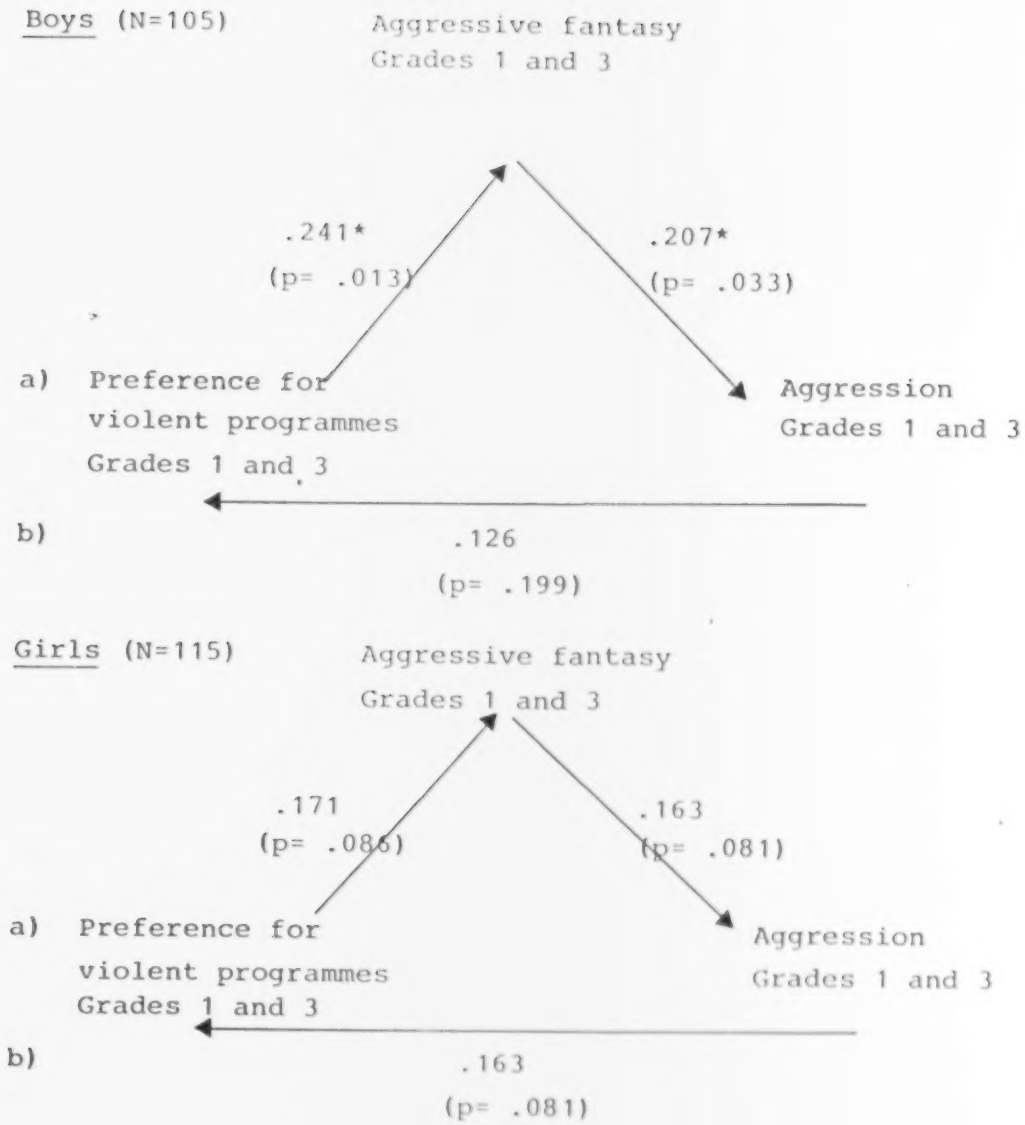

Figure 3. Models based on information processing theory showing directionality in the TV violence viewing - aggression relation.

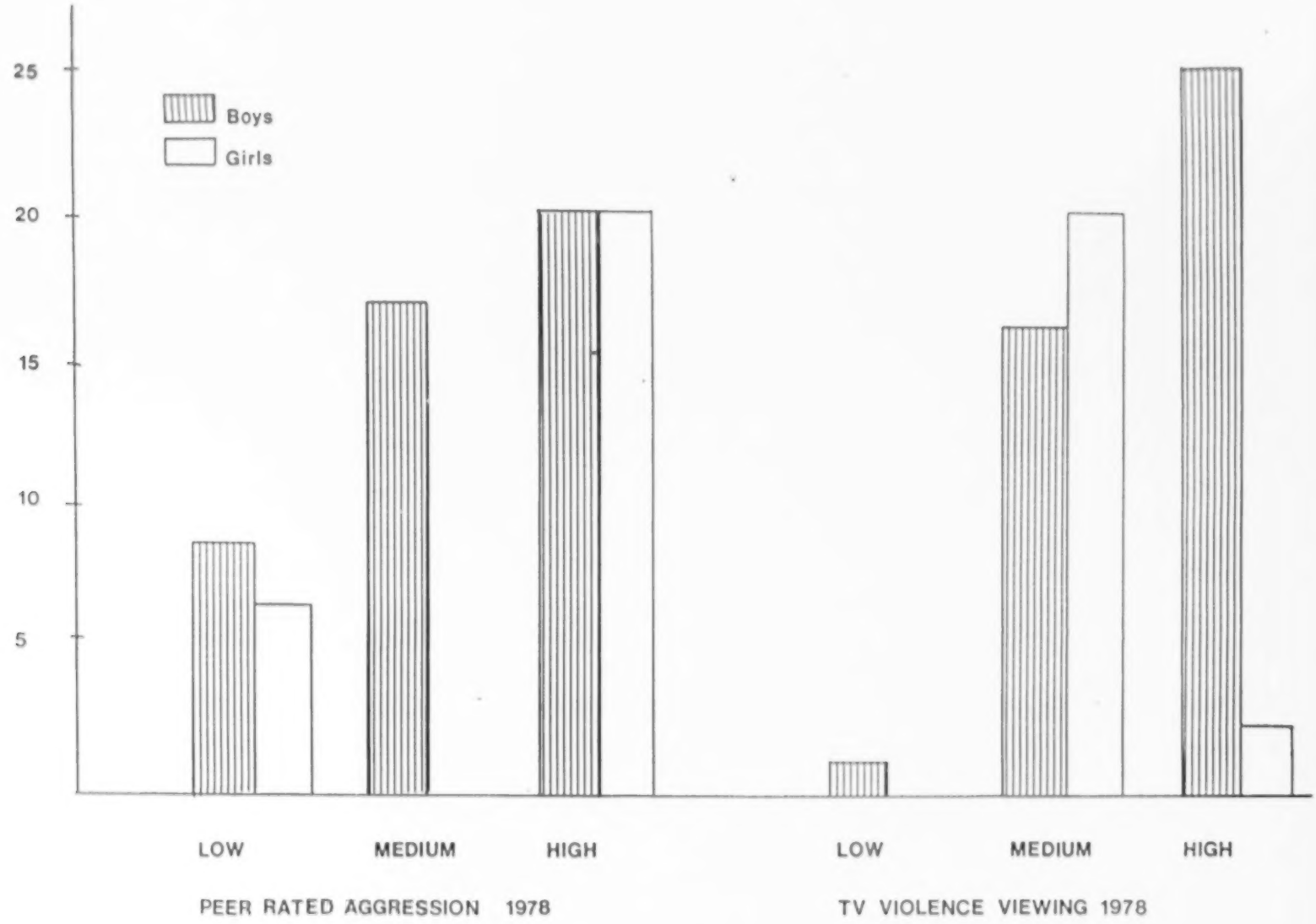

Figure 4. Mean number of criminal convictions by the beginning of 1985 as a function of earlier peer rated aggression and TV violence viewing.

Table 1. Differences in variables measured in the 7th and 9th grades between subjects high or low in TV violence viewing (TVVLO) in 1st and 3rd grades.

	LO TVVLO (N = 44)		HI TVVLO (N = 45)			
Variable measured in 1983	X	SD	X	SD	t	p
Peer rated aggression	103.4	149.6	150.7	136.5	1.56	.122
Violent behaviour	1.6	1.1	2.6	1.1	3.93	.0002
TV viewing frequency	13.1	7.6	18.8	7.6	3.51	.0007
Cinema attendance frequency	1.1	0.7	1.6	1.6	2.20	.031
Video viewing frequency	1.3	2.2	5.8	7.6	3.81	.0004
TV violence viewing	131.1	50.0	161.5	40.9	3.14	.002
Movie and video violence	3.7	2.7	6.2	2.1	4.78	.0000

Table 2. Differences in variables measured in the 7th and 9th grades between subject high or low in peer rated aggression (PRAGG) in 1st and 3rd grades.

	LO PRAGG (N = 46)		HI PRAGG (N = 45)			
Variable measured in 1983	X	SD	X	SD	t	p
Peer rated aggression	51.9	50.9	232.3	191.7	6.10	.0000
Violent behaviour	1.5	0.9	2.7	1.3	4.83	.0000
TV viewing frequency	14.1	7.9	15.3	8.5	0.72	.474
Cinema attendance frequency	0.9	0.6	1.5	1.7	2.06	.044
Video viewing frequency	1.9	3.9	4.1	5.8	1.98	.052
TV violence viewing	179.7	92.2	156.8	88.3	1.19	.239
Movie and video violence	4.4	2.7	5.8	2.5	2.61	.010

Table 3. Mean peer rated aggression in 7th or 9th grades for subjects high or low in both peer rated aggression and TV violence viewing in 1st (7th graders) or 3rd (9th graders) grades.

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	223.28	73.50
LO	305.25	46.57

Boys 7th grade

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	257.50	76.71
LO	122.00	48.00

Girls 7th grade

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	356.17	102.57
LO	169.25	50.33

Boys 9th grade

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	124.50	110.25
LO	167.25	29.00

Girls 9th grade

Table 4. Mean television violence viewing in 7th or 9th grades for subjects high or low in both peer rated aggression and TV violence viewing in 1st (7th graders) or 3rd (9th graders) grades.

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	151.00	269.83
LO	140.75	235.71

Boys 7th grade

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	127.25	186.29
LO	135.50	127.86

Girls 7th grade

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	181.17	107.00
LO	96.00	187.67

Boys 9th grade

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	119.25	155.00
LO	152.50	98.17

Girls 9th grade

Table 5. Mean aggressive fantasy and physical fighting as a function of peer rated aggression and TV violence viewing seven years earlier.

AGGRESSIVE FANTASY

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	1.18	1.00
LO	0.80	0.73

Boys

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	1.44	0.91
LO	0.83	0.54

Girls

PHYSICAL FIGHTING

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	0.73	0.75
LO	0.20	0.27

Boys

TV VIOLENCE VIEWING	PEER RATED AGGRESSION: HI	PEER RATED AGGRESSION: LO
HI	1.00	0.00
LO	0.20	0.00

Girls

Table 6. Percentage of subjects arrested for offences (on police files) until 1985, as a function of previously measured aggressiveness and TV violence viewing.

	Peer rated aggression 1978			TV violence viewing 1978		
	LO	MED	HI	LO	MED	HI
Boys	23.1%	30.8%	46.8%	7.7%	46.2%	46.2%
Girls	16.7%	-	83.3%	-	66.7%	33.3%
All subjects	21.1%	21.1%	57.8%	5.8%	52.6%	42.1%